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Integral gas seal for fuel cell gas distribution assemblies and method of fabrication.

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A porous gas distribution plate assembly for a fuel cell, such as a bipolar assembly, includes an inner impervious region wherein the bipolar assembly has good surface porosity but no through-plane porosity and wherein electrical conductivity through the impervious region is maintained. A hot-pressing process for forming the bipolar assembly includes placing a layer of thermoplastic sealant material between a pair of porous, electrically conductive plates, applying pressure to the assembly at elevated temperature, and allowing the assembly to cool before removing the pressure whereby the layer of sealant material is melted and diffused into the porous plates to form an impervious bond along a common interface between the plates holding the porous plates together. The distribution of sealant within the pores along the surface of the plates provides an effective barrier at their common interface against through-plane transmission of gas.

EP 0 122 150 A3

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Fig. 2

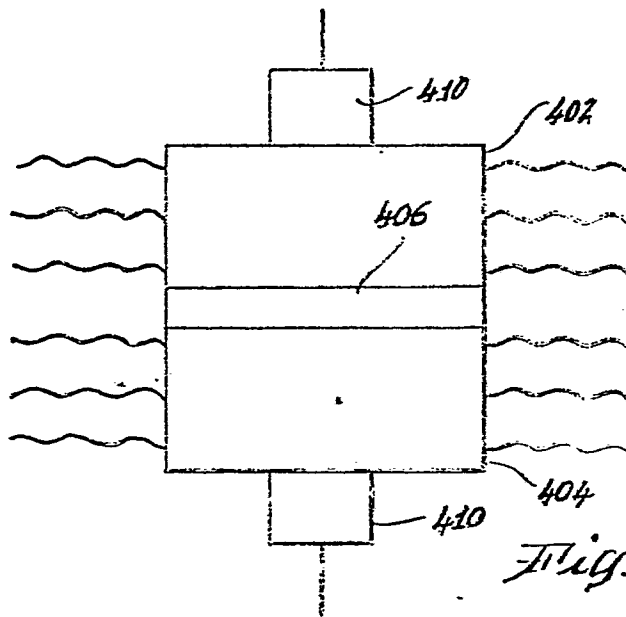
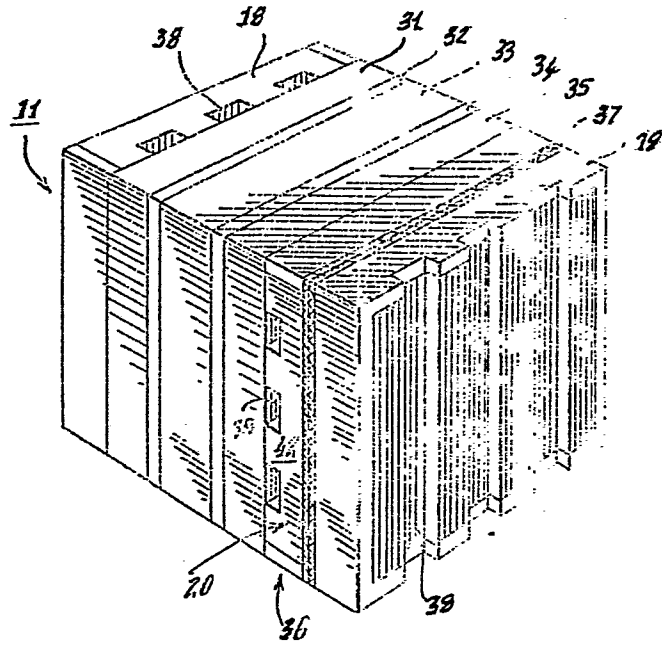


Fig. 4



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	FR-A-1 544 940 (VARTA ART. GES.) *Claims 1,2,5,8,9,13,14; page 2, left-hand column, paragraph 7; page 3, left-hand column, paragraph 3; page 1, right-hand column, last paragraph - page 2, left-hand column, paragraph 1; examples 1,3,4*	1,2,4,6,7	H 01 M 8/24 H 01 M 8/02
X	--- PATENTS ABSTRACTS OF JAPAN, vol. 7, no. 49(E-161)(1194), 25th February 1983; & JP - A - 57 199 181 (TOKYO SHIBAURA DENKI)(07-12-1982)	1-4,7	
D,E	--- EP-A-0 106 603 (ENGELHARD CORPORATION) *Claims 1-11; page 11, line 24 - page 12, line 25*	1,3,4,5	TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
A	--- US-A-4 233 369 (R.D.BREAULT et al.) *Column 5, lines 14-36*	5	H 01 M 8/24 H 01 M 8/02 H 01 M 4/96
A	--- US-A-4 245 009 (R.J.GUTHRIE) *Column 4, line 67 - column 5, ligne 4; column 6, lines 10-16*	5	
A	--- DE-A-1 964 811 (SIEMENS AG.) *Claims 1,3,5,6,8*	5	
	--- -/-		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 08-03-1985	Examiner D'HONDT J.W.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int Cl ³)
A	PATENTS ABSTRACTS OF JAPAN, vol. 7, no. 76(E-167)(1221), 30th March 1983; & JP - A - 58 5977 (KOGYO GIJUTSUIN (JAPAN)(13-01-1983)	5	
A	FR-A-1 250 769 (UNION CARBIDE)		
D, E	EP-A-0 110 517 (ENGELHARD CORPORATION) *Figure 2, page 9, lines 1-23; page 10, lines 2-12; claim 4*	1-4	
			TECHNICAL FIELDS SEARCHED (Int Cl ³)
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 08-03-1985	Examiner D' HONDT J.W.
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